

OZONE DISINFECTING MOUSE

The Background of the Invention

5 This invention relates a mouse (computer mouse), and
is more particularly to having ozone disinfection
capabilities for purifying the air. This refers to
mouses that have been outfitted with an ozone generator
module (in the inside of non-cordless mouses or the
10 inside of receiver or recharger outlet housing in
cordless mouses) that produces and dispels ozone gas
that can disinfect the mouse itself and its
surroundings, as well as purify the air. This process
occurs using the power from the USB (Universal Serial
15 Bus) connector in non-cordless mouses or the outer
power from receivers or power outlets in cordless
mouses.

Generally, a mouse is an essential computer device that
20 is used to input coordinates, select items, move items
on the screen, etc. There are two general types of
mouses, including cordless and non-cordless.
Cordless mouses are typically connected to computers
through a USB (Universal Serial Bus) plug to help
25 conduct mouse operations using the computer's power.
Cordless mouses are also generally connected to a
computer through a USB (Universal Serial Bus) through
a receiver or electrical outlet, such that the mouse

operations are sent remotely through a cordless module in a receiver or electrical recharge outlet. Ordinary cordless mice can also be rechargeable, with the help of a recharger cradle. During use, mice are in constant contact with the human hand, yet most people do not wash their hands before using mice, and commonly come in contact with other objects during mouse use, especially in locations such as banks, governmental institutions, or computer outlets, in which there are computers and mice provided to the public for information needs. From this, we can see that the mouse is a breeding ground for germs, and can spread them through close contact with human hands. This invention was designed precisely for disinfection of mice during use.

Summary of the Invention

In one respect, the present invention is directly to provide ozone disinfecting cordless mice that have been outfitted with an internal ozone generator module that produce and dispel ozone gas, thereby disinfecting the mouse itself and its surroundings, as well as purifying the air. These mice are powered from the USB (Universal Serial Bus) connector in non-cordless mice or the outer power from receivers or power outlets in cordless mice.

In one embodiment of the present invention is to

provide ozone disinfecting cordless mice, specially
equipped with ozone generator modules in the receiver
or recharging outlet. These mice are powered by the
existing power supply in the receiver or recharging
5 outlet, and produce ozone through the ozone generator
module when placed in the docking bay of the receiver
or recharger outlet. This ozone is then dispelled
through a specialized vent onto the mouse, thus
disinfecting the mouse or the area around it and/or
10 cleaning or disinfecting the air.

Brief Description of the Drawings

The foregoing aspects and many of the attendant
15 advantages of this invention will become more readily
appreciated as the same becomes better understood by
reference to the following detailed description, when
taken in conjunction with the accompanying drawings,
wherein:

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FIG. 1 is a 3D view of a non-cordless material of this
present invention;

FIG. 2 is a exploded perspective view of FIG.1.;

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FIG. 3 is a Simplified circuit connectivity diagram
of Fig 1;

FIG.4 is a rear elevational view of FIG. 1;

FIG. 5 is a sideview of FIG. 1;

- 5 FIG. 6 is an enlargement view of of the ozone generator module of FIG. 1.;

FIG. 7 is a side view of FIG. 6.;

- 10 FIG. 8 is a circuit diagram of FIG. 6.;

FIG. 9 is a 3D view of a cordless material of this present invention;

- 15 FIG.10 is an exploded persepective view of the receiver (or recharger outlet) of FIG. 9.;

FIG.11 is a front elevational view of FIG. 10.;

- 20 FIG. 12 is a side view of FIG.9;

FIG.13 is a diagram of circuit connectivity of FIG. 9.;

- 25 FIG.14 is an enlargement view of the ozone generator module of FIG.9.;

FIG.15 is a sideview of FIG. 14.;

FIG.16 is a circuit diagram of the ozone generator module of FIG. 14..

Detailed Description of the Preferred Embodiments

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The non-cordless mouse 1 as shown in FIGs. 1, 2, and 3 is a non-cordless mouse that includes a top carapace 10 and bottom carapace 11. Inside the carapace, there is a Micro Controller circuit board 12, an optical coordinates device 13 for coordinate signal output, and tow buttons 14 or reel wheel 15 for control signal output. In addition, the mouse can transmit signals to and receive power from the computer through a USB (Universal Serial Bus) connection plug 16. The special feature of this mouse is that a small ozone generator module 2 is installed in an appropriate location (for example, the aft portion of the non-cordless mouse) inside the carapace of the non-cordless mouse, such that the ozone generator module 20 2 is directly connected to the power cord 17 from the USB plug 16, and the ozone generator module 2 can utilize the existing power supply of the non-cordless mouse, as shown in FIG. 3. As a result, the non-cordless mouse can then generate ozone gas, and dispel 25 it from a suitable vent in the carapace (for example, the boundary crevice 18 in the carapace of the mouse, or an additionally designed vent 19 in its upper carapace), as shown in FIGs. 4 and 5. Thus, the mouse

is able prevent the accumulation or spreading of germs by disinfecting the mouse itself or the area around it (including the face of the hand that is directly in contact with the mouse), and/or clean or disinfect
5 the surrounding air.

As shown in FIGs. 6, 7, and 8, because mice are only roughly the size of the human hand, there are inherent internal space limitations. In addition, mice only
10 utilize approximately 5 volts of power. This means that the ozone generator should be able to be easily installed in the mouse carapace, not affect its operation, and at the same time produce sufficient ozone gas using the existing power supply of the mouse.
15 Thus, the ozone generator module used must at least meet the size and modulation requirements. Although the process by which the ozone generator module generates ozone gas utilizes the well-known point discharge principle, its structural design meets the
20 requirements for the change in size and modulation. This includes an insulator box 20 (the square box shown in figure 6). At the bottom of the box, there is a circuit board 21, attached with a small transformer 22, as to allow the low voltage mouse to change to high
25 voltage, low electric flow. Several electrode pins 23 are then attached onto the circuit board 21, as well as an electrode board 24 with opposing electrode pins 23. The electrode board 24 has separate holes 25 for

each electrode pin 23, such that the center of each hole 25 is perfectly aligned with the point of each electrode pin 23. In addition, two wires (1 positive and 1 negative) should be connected from the circuit board to the power cord 17 from the USB plug 16. In addition, a layer of insulating resin 27 (such as Epoxy) is attached to the interior of the insulated box 20, such that it is sufficiently insulated. The above structure can effectively reduce the volume of the ozone generator module, thus allowing it to be easily installed and used in the body of the non-cordless mouse 1. During use, point discharge occurs from the electrode pins 23 after being contacted by the high voltage, and there is a surge in the electrodes in the holes 24 of the electrode board 24. This causes an ionization in the surrounding air, allowing the electric molecules to take on an extra anion, and become ozone. Negatively charged ions can also be produced from the point discharge of the circuit board shown in Fig. 8, thus creating the negative ion effect, that is beneficial to the human body.

As shown in FIGs. 9, 10, 11, 12, and 13. Cordless mice 3 are remotely controlled devices used in tandem with receivers that are connected to a computer, and are not themselves directly connected to the power supply of computers. Cordless mice 3 are generally used with an internal battery, and would be inconvenient due to

short battery life if installed with an ozone generator model. Therefore, this project goes a step further with cordless mouses 3 by developing a receiver 4 or charger outlet (not shown in diagram) that is installed with
5 an ozone generating module 5 that utilizes the existing power supply of the receiver 4 (in the case of a recharger outlet, the module would utilize the power supplied by an ordinary electric outlet (not shown)). This ozone generator module 5 is able to produce ozone
10 gas during use of the receiver, which is dispelled through a vent 43 in the receiver cradle, and can disinfect the body of the cordless mouse or its surroundings, and/or disinfect or clean the surrounding air.

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As shown in FIGs. 14, 15, and 16. Due to the fact that receivers 4 or recharger outlets can be larger than the average mouse, they are not restricted to the ozone generator module 2 described above, although the
20 modulation and size of the ozone generator module 5 used is the superior design. In addition, the ozone generator module 5 uses the reestablished method of an ultraviolet light tube to produce ozone gas, however the structural design of the unit was changed to better
25 meet modulation and size requirements. This includes a shell shaped insulator box 50 (such as the rectangular box 50 shown in FIGs. 14 and 15). There is a circuit board installed in the lower portion of

the insulator box 50, and is installed with a small transformer 52 that can change the low voltage nature of mouses to high voltage, low current. In addition, an ultraviolet light tube 53 is connected to the outside of the circuit board, and 2 wires (negative and positive) are connected from the circuit board to the power supply. The interior of the insulation box 50 is lined with a layer of insulation resin (such as Epoxy) to contain and insulate the circuit board. This structure effective reduces size of the ozone generator module 5, thus allowing it to be easily installed in the receiver 4 or charge outlet. During use, the high voltage electricity in the ultraviolet light tube 53 causes the ultraviolet light tube 53 to continuously produce ozone gas. A small fan 44 can then be installed in the receiver 4, blowing the air towards the ultraviolet light tube 53, thus efficiently increasing the amount of ozone dispelled through the vent 42.

While preferred embodiments have been shown and described, various modifications and substitutions may be made without departing from the spirit and scope of the invention. Accordingly, it is to be understood that the present invention has been described by way of example, and not by limitation.